

REMARKS

Claims 1-10, 14, 15, 20, 24, 25 and 27-33 are all the claims pending in the application.

Reconsideration and review of the claims on the merits are respectfully requested.

Specification

The Examiner objects to the disclosure because in the paragraph bridging pages 8 and 9, it is confusing and unclear to the Examiner whether the “current collector” or “the plane” is free of active material on the part of the collector that forms a part of the storage battery outer case.

Applicant responds as follows.

Initially, Applicant amends the specification at page 21, line 18 to refer to Figure 8, instead of to Figure 7, which is supported, for example, by the description in page 24, lines 16 to 17 of the present specification.

Further, based on the Examiner’s indication that certain language in the specification is confusing and unclear, Applicant amends the specification in the bridging paragraph at pages 8-9 for clarification to recite the following: “Further, by providing an active material on the surface of the current collector, adding a prescribed pressure in the direction perpendicular to the current collector plane, maintaining electrical contact, making the outer plane of the outermost collector free of active material a part of the storage battery outer case, and providing the structure having all the functions of the current collector, the battery outer case, and the connecting terminal, strap or pole of the storage battery can be omitted. The outer plane of the outermost collector is free of active material.” Applicant submits that it is clear that the outer plane of the outermost collector is free of active material.

The amendment above is based on Fig. 8 of the present application and the description in page 21, lines 15 to 18 of the present specification. According to Fig. 8 and this description, it is evident that "the outer plane of the outermost collector" is "a part of the storage battery outer case". Further, no active material is present in the outer plane of the outermost collector. Accordingly, no new matter has been added.

Accordingly, Applicant respectfully requests entry of the amendment along with reconsideration and withdrawal of the objection to the specification.

Claim Rejections - 35 U.S.C. § 102/§ 103

A. Claims 1-4, 6 and 15 are rejected under 35 U.S.C. § 102(b)/103(a) as assertedly being anticipated by, and alternatively unpatentable over, Dasgupta et al. (U.S. 5,547,782) for the reasons given in the Office Action.

B. Claims 1-7, 10, 14, 20, 24, 25 and 28-33 are rejected under 35 U.S.C. § 102(b)/103(a) as assertedly being anticipated by, and alternatively unpatentable over, Kao, Substrate materials for bipolar lead/acid batteries, Journal of Power Sources, 70 (1998), for the reasons given in the Office Action.

C. Claims 1-5, 14 and 20 are rejected under 35 U.S.C. § 102(b)/103(a) as assertedly being anticipated by, and alternatively unpatentable over, Bullock et al. (U.S. 5,045,170) for the reasons given in the Office Action.

D. Claims 8, 9 and 27 are rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Kao, Substrate materials for bipolar lead/acid batteries, Journal of Power Sources, 70 (1998), for the reasons given in the Office Action.

Applicant responds as follows.

The pressure element of Claim 1 is present in Applicant's final product, and it is not a product-by-process limitation.

For clarification, Applicant amends Claim 1 to recite that "a pressure is added perpendicularly to the current collector plane". This amendment to Claim 1 is based on, for example, the description in page 9, lines 7 to 15 in the present specification, after the amendment to the specification described above has been made. No new matter is added. Further, Applicant amends Claim 1 to recite "and there is provided a structure such that a pressure of 4×10^4 to 20×10^4 Pa is maintained perpendicularly to the surface of said collector". (see Amendments to the Claims). Support can be found in original Claim 13, now canceled. Accordingly, no new matter is added. Entry of the Amendment is respectfully requested.

In view of the clarifying amendment, Applicant respectfully submits that neither Dasgupta, Kao nor Bullock discloses or suggests each and every element of the present claims, as amended.

The Examiner asserts at page 8, lines 3 to 7 of the Final Office Action dated January 8, 2004 that "the claims are read in light of the specification, however, only limitations contained in the claims are considered patentable subject matter". Therefore, the Applicant amended Claim 1 so as to more clearly recite a gage pressure. Specifically, the expressions "a pressure is added" and "there is provided a structure such that a pressure of 4×10^4 to 20×10^4 Pa is maintained" constitute elements of Claim 1.

Thus, as the Applicant has asserted in the Remarks dated October 31, 2003, to the previous Office Action (from page 10, line 2 from the bottom to page 11, line 8), if the values 4×10^4 to 20×10^4 Pa are interpreted as absolute pressures, 4×10^4 Pa, for example, which lies within this pressure range, conflicts with the expression that "a pressure is added" set forth in Claim 1, because 4×10^4 Pa is less than an

atmospheric pressure. This means that 4×10^4 to 20×10^4 Pa must be interpreted as the values for gauge pressure.

Based on the discussion heretofore, Applicant effectively rebuts and traverses the Examiner's indication that "the claims do not recite a gage pressure and it is unclear how the specification supports 'a gage pressure'."

The Examiner indicates at page 8, lines 8 to 12 of the Final Office Action that "constructing a battery or battery components at standard atmospheric pressure is not considered patentable subject matter". However, by taking into account the aforementioned discussion, the pressure set forth in Claim 1 of the present application does not include an atmospheric pressure. Hence, this indication is now rebutted.

The Examiner indicates at page 8, lines 13 to 17 of the Final Office Action that the limitation "kept pressed at a pressure of 4×10^4 to 20×10^4 Pa" does not explain the fact that "the collector is kept pressed in the storage battery", and can be interpreted as "the pressure at which the collector is manufactured before assembling the storage battery".

However, Applicant points out that the invention of Claim 1 is an invention of a product, and the limitation that "there is provided a structure such that a pressure of 4×10^4 to 20×10^4 Pa is maintained perpendicularly to the surface of said collector" is included in order to specify the product. In the expression of this limitation, the underlined portions are not in the past tense, but in a tense like the present tense.

If the Applicant would have ever used a past tense, it would have been natural for the Examiner to point out that the invention relates to a product-by-process, since the act of "maintaining" is involved among the steps required for the production of the final product. But, since a tense like the

present tense is used as in amended Claim 1, it is impossible to otherwise interpret the claim except that the foregoing expression describes the present feature of the final product.

Accordingly, the Examiner's indication that "how long the collector is kept pressed at the recited pressure" is not relevant. Further, the Examiner's indication that, because of the lack of the expression "in the storage battery", the description is comprehended as a product-by-process limitation whereby the final product is not kept pressed is also not relevant.

Furthermore, the Examiner states again in a similar manner from page 8, line 17 to page 9, line 2 of the Final Office Action that the description in the specification explains a product-by-process limitation in the claim. However, this statement is not relevant as well.

First, the Examiner states that Claim 1 includes a limitation to a product-by-process by referring to the description "applying an active material to the substrate be subject to a high pressure ..." in page 23, lines 15 and so forth in the present specification. This statement is presumed to be due to the Examiner's comprehension of this sentence that "applying an active material" (namely, an act of production) is "subject to a high pressure".

However, the Examiner's comprehension appears to be in error. The subject of the portion "be subject to a high pressure..." is not "applying" but "the positive electrode plate". In other words, the sentence means that "the positive electrode plate is subject to a high pressure". Thus, what is subject to a high pressure is not "an act of production" but a product of "a positive electrode".

According to the foregoing discussion, Applicant submits that the Examiner's understanding that the claim describes a product-by-process limitation is incorrect.

Next, the Examiner indicates that the invention indicates a product-by-process limitation in view of the description in the last paragraph of page 22 of the present specification "had been prepared at a pressure of from 40 kPa to 200 kPa" (see page 8 line 3 from the bottom of the Final Office Action). However, in the case where a final product is produced whose collector is kept pressed, it is reasonable to apply a pressing force at a certain stage in the manufacturing procedure. Thus, it is also reasonable that the specification includes the description "had been prepared at a pressure of from 40 kPa to 200 kPa".

According to the arguments hereinabove, the description in the specification of "had been prepared at a pressure of from 40 kPa to 200 kPa" does not necessarily result in the lack of the explanation that "the pressure is applied to the final product (storage battery)" in Claim 1. Namely, Applicant submits that the Examiner's indication set forth from page 8, last line to page 9, line 2 of the Final Office Action is incorrect, as a pressure is applied to the final product according to Claim 1 of Applicant's claimed invention.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 102(b) and § 103(a).

Conclusion

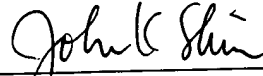
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No. 09/743,962

Q62718

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



John K. Shin
Registration No. 48,409

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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